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Technical Push on Integrated Microsystems

At MTO, new microsystems are turning impossible dreams into reality. Novel components will permit undreamed of systems to exist. MTO is presently focused on five broad topics: architectures, algorithms, electronics, photonics, and MEMS.

These frontiers make up what we have described as microsystems. We at MTO are the engineers of the nanoworld. We build systems on chips that will enable future military systems to happen.

MTO is always looking for great new ideas, the more challenging the better.

- Better energy sources
- More efficient energy utilization
- Sensors that detect in ranges previously unexplored
- Better communication devices
- Higher frequency transmit-and-receive modules
- Components that can be trusted to be fabricated as designed
- Systems that combine smart hardware and software
- Systems that can be built with imperfect and failure prone components
- Systems that learn to adapt to the environment
- Systems that sense their performance and repair themselves
- And really far-out ideas like antimatter for energy sources

MTO has many exciting projects ranging from silicon-based lasers, to tunable wavelength infrared imagers, to advanced power systems based on silicon carbide devices, to photonic crystal-based terahertz communication systems, to InP integrated circuits. These are just a few of the many novel projects in our office.

We have a whole set of open BAAs, which you can investigate from the MTO site on the DARPA web page. The Entangled Science and Technology program promotes the basic understanding and development of entangled quantum systems.

One open BAA is the Analog to Information program, which focuses on the compressive sampling of RF signals using the informative components of the RF environment rather than interference components. Another BAA is the High Operating Temperature Mid-Wave Infrared Focal Plane Arrays program, which is high-speed imaging that requires innovative component approaches to achieve low-power read-out of large arrays, compatible with lightweight platforms. Another BAA is the Technology for Agile Coherent Optical Transmissive Architecture program, which fully exploits multispectral absolute optical phase and frequency information for secure communications, high-resolution imaging and sensing.

A full list of open BAAs can be found on the MTO website. However, not to worry, if you don't find your favorite topic listed. The best way to get your idea funded is to join MTO as a program manager. You could join this team. Program managers run the show; they are the venture capitalists for the DoD. It is a real challenge to spend a tour at DARPA, and MTO is the place to be. Go to the MTO website to see how to apply.